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THE DUTCH ELM DISEASE IN NEW JERSEY

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Late last fall (1932), a single elm in Memorial Park, Maplewood, showed a yellowing and slight wilting of the foliage on a single branch. Due to the lateness of the season when this condition appeared, it was thought to be due to the drought which brought on an early maturity. However, this spring this particular branch failed to come into leaf and soon other branches began to turn yellow and wilt in spite of excessive rainfall. This aroused the suspicion of Mr. Richard Walter, Park foreman, who on June 11 submitted samples of the branches to the New Jersey Experiment Station. These samples were immediately forwarded to the Dutch Elm Disease Laboratory at Wooster, Ohio. Cultures were made from these specimens and the fungus Graphium ulmi, which is responsible for the Dutch elm disease, was isolated. On June 26, this tree was dead and was taken down and burned. It was found to be heavily infested with the European elm bark beetle.

With the definite assurance that the Dutch elm disease was present in this locality, steps were immediately taken to initiate an eradication campaign similar to the one successfully followed in Ohio. Dr. O. N. Liming, who for three years has been the chief scout in Ohio, was immediately moved to New Jersey to take charge of the field work of scouting and removal of diseased trees. The U. S. Department of Agriculture and the New Jersey Experiment Station have the active assistance of county and city officials. The State Department of Agriculture is cooperating by instructing its nursery inspectors to do scouting in combination with their regular nursery inspections. The State Department of Conservation and Development has delegated a squad of men from the Citizens Conservation Camp at South Mountain Park to assist the technical men in both scouting and removal of trees. This organization of workers started active scouting and eradication on the tenth of July.

All trees so far proved to be infected are native American elms. Up to July 27, sixty-nine infected trees, from which the fungus has been isolated and determined in culture, have been found in fourteen New Jersey towns and cities.

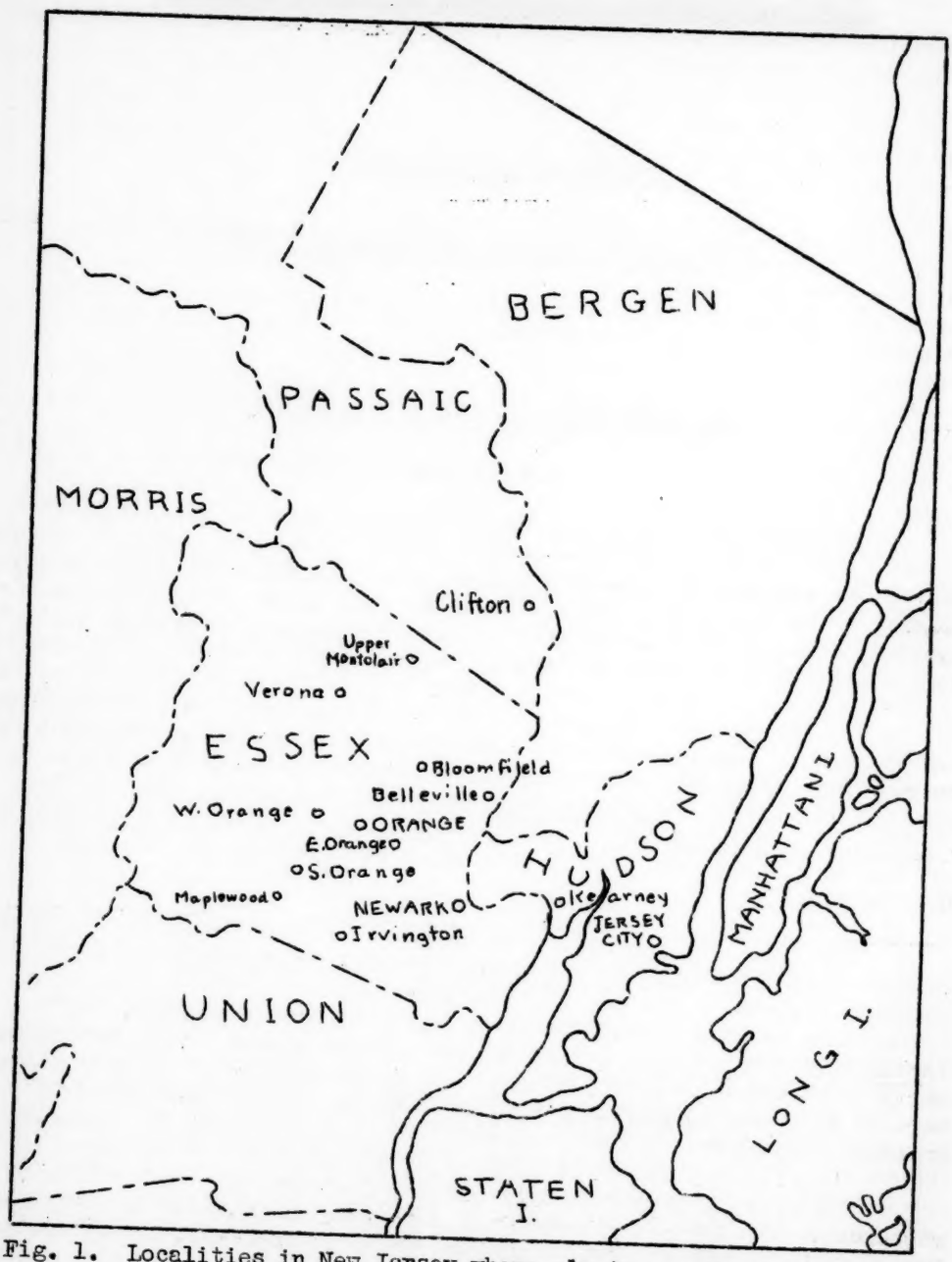

Fig. 1. Localities in New Jersey where elm trees affected with the Dutch elm disease due to Graphium ulmi had been found up to July 27, 1933.

As will be seen from the accompanying map (Fig. 1) these known infections are all in Essex, Hudson, and Passaic Counties and within 20 miles of New York City.

The seriousness of the situation can hardly be exaggerated. The elm is one of the most valuable shade trees in New Jersey and adjoining States and is by far the most valuable in New England.

It is already apparent that the eradication campaign under way in New Jersey faces a more difficult task than the one in Ohio. The disease is already spread over a wider area and many more trees are involved. Moreover, in Europe it has been fairly well demonstrated that the disease is spread by European elm bark beetles. None of these beetles is present in Ohio where this disease was first discovered in this country in 1930. One species occurs in New Jersey, however, and several of the trees known to be infected with the Dutch elm disease in New Jersey, were also infested with this beetle. With our present incomplete knowledge of the life history of the fungus causing the disease, and with a full knowledge of what to expect if it is not checked, an eradication campaign is the logical method to follow.

The actual work of removing trees is greatly increased by the fact that those so far found infected have been in cities, frequently in close proximity to telephone and other wires. The trees must thus be taken down a limb at a time rather than felled at once.

The prompt mobilization of a very considerable staff of technical men and the active and close cooperation of all interested agencies offer, however, a very good chance of success in this difficult undertaking.

DISEASES OF CEREAL AND FORAGE CROPS

BACTERIAL WILT OF CORN REPORTED FROM MAINE

In connection with the accompanying report of bacterial wilt (Aplanobacter stewartii) from Maine, the first report from New England north of Massachusetts, it should be noted that Oxford County forms a part of the belt in southern Maine where corn canning has long been an important industry.

"The first specimen diagnosed as bacterial wilt was received yesterday. This specimen came from the county agent's office in South Paris, Oxford County, with no data given as to location.

"The leaves were wilted and water-soaked, the symptoms apparently progressing from the blades downward. A yellow, sticky bacterial ooze was found about wounds and cut bundles and the presence of the organism was confirmed by microscopic examination." (Florence L. Markin - July 21).

BACTERIAL STALK ROT AND BACTERIAL WILT ON CORN IN WEST VIRGINIA

We still continue to have more or less bacterial stalk-rot (Bacterium dissolvens) on sweet corn, accompanying Stewart's disease which is serious again this year, perhaps more so than during the last three years. In all cases the stalk-rot seems to be associated with worm injury at the base of the stalk. (C. R. Orton - July 14).

DROUGHT INJURY TO SMALL GRAINS

Drought injury to cereals has been so serious throughout the Middle West that diseases have not been a factor at all this year, except in certain very restricted localities.

ASHY STEM BLIGHT REPORTED ON SOY BEAN

Soy bean plants affected with the ashy stem blight caused by Macrophomina phaseoli were sent by S. G. Lehman from North Carolina. The fungus was determined by A. F. Kempton and F. Andrus. This seems to be the first report of its occurrence on soy bean.

F R U I T D I S E A S E S

FRUIT DISEASE REPORTS

NEW YORK: Dry weather which began about the middle of June is beginning to affect fruit trees. In some sections apple and cherry trees are wilting, especially on heavy clay soils, and the growth of apple fruits has been checked. In Columbia County, according to A. B. Buchhols, "Considerable numbers of cherry trees are dying suddenly, after practically maturing the crop. The cause seems hard to determine, although it appears to be complicated by drought and shot hole borers." Apple scab (Venturia inaequalis) is present in most orchards, but dry weather has checked its development and it is generally well under control in sprayed orchards. In Orleans County, however, E. R. Wagner states that "Apple scab continues to spread on the leaves even without rain." Cherry leaf spot (Coccomyces hiemalis) occurs generally but dry weather has hindered its spread also, although it has caused heavy defoliation in some orchards. Black rot of grapes (Guignardia bidwellii) is not very prevalent. Both downy mildew (Plasmopara viticola) and powdery mildew (Uncinula necator) have appeared on grapes.

MARYLAND: Apple scab (Venturia inaequalis) is very severe this year and will probably cause an average loss of at least ten per cent which is twice the loss last year. Blight (Bacillus amylovorus) has also been unusually severe this year on both apples and pears. In many instances much of the young fruit has been destroyed by the blight. Peach leaf curl (Exoascus deformans) was also unusually severe in all orchards which were not thoroughly sprayed at the proper time.

All of these diseases were favored by the unusually heavy rainfall which we had during the spring and early summer months. Had it not been for information given to the fruit growers in regard to conditions in the orchards and the stages in the development of these pests, losses would have been many times as great. This is especially true of apple scab which developed very early in the season in certain parts of the State. (R. A. Jehle, July 17).

ARKANSAS: We are in the midst of a severe drought beginning about the first of June, which has greatly modified plant disease conditions in Arkansas, particularly in the western half of the State.

Blight (Bacillus amylovorus) was very severe as is often the case. Apple scab (Venturia inaequalis) is perhaps more prevalent than in some years but not so severe as we have often seen it. Blotch (Phyllosticta solitaria) promises to be severe in unsprayed orchards; likewise bitter rot (Glomerella cingulata). However, orchardists are spraying perhaps better than they have for a few years and apple diseases seem to be well under control.

Black rot of grapes (Guignardia bidwellii) started very early and many bunches were affected immediately after blossoming, but almost all of this was checked soon after the first of June by the dry weather.

The peach and plum crop in the State is very light. There was a considerable amount of brown rot (Sclerotinia fructicola) on early peaches but I doubt if it is as serious as in many other years. Peach leaf curl (Exoascus deformans) was more severe in the southwestern main peach belt of Arkansas than in many years.

In general diseases are not as severe this year as they have been in many previous years. Had wet weather continued through June we would undoubtedly have had very severe conditions. (V. H. Young, July 17).

MISCELLANEOUS REPORTS ON FRUIT DISEASES

PEAR LEAF BLIGHT IN VIRGINIA: Leaf blight caused by Fabraea maculata was found to be very severe in Arlington County, Virginia, on seedling pears. The foliage was so badly spotted that many of the leaves were falling off and the fruit was almost completely covered making it wholly unsalable. (C. L. Shear, July 21).

BLACK ROT OF GRAPES: Black rot of grapes (Guignardia bidwellii) was noted as very serious at Arlington Farm, Virginia, and the Beltsville Farm in Maryland, in spite of the use of the usual control measures, including pruning and spraying. (C. L. Shear, July 21).

TWIG BLIGHT OF PEACH: Peach twigs attacked by Sphaeropsis malorum were received from Texas, collected by J. J. Taubenhaus in April.

BACTERIAL SPOT ON JAPANESE PLUM IN MAINE: The bacterial spot caused by Bacterium pruni has apparently not been reported from Maine. During July specimens of Japanese plum affected with the disease were received from Florence L. Markin.

MARKET PATHOLOGY

NEW YORK MARKET PATHOLOGY NOTES

APPLES: During May and June, Sporotrichum rot of apple fruits which we had not previously seen on the New York market was found in five cars of Winesap apples from near Wenatchee, Washington. In the five cars 7, 4, 16, 10, and 10 per cent of the fruit respectively were affected. The apples were in the ripe stage of maturity. The decay was of the deep watery type, firm but otherwise having much of the appearance of blue mold rot. A few of the spots had light tan centers where the decayed tissue had dried out. Isolations gave consistently a species of Sporotrichum similar to, if not identical with, S. malorum

CHERRY: The California cherry shipping season is just finished. With the exception of an occasional car the cherries were exceptionally free from decay. In this respect the fruit was better than found the past four years. Green mold rot (Cladosporium sp.) was the only decay noted to any extent. It was found consistently throughout the season affecting a few cherries in almost every shipment examined. The decay starts at skin-breaks or bruised areas. (C. O. Bratley, July 10).

VEGETABLE DISEASES

BACTERIAL WILT OF BEAN IN WEST VIRGINIA: I have had three specimens of bacterial wilt (Bacterium flaccumfaciens) of bean, one of them this afternoon. I have never actually seen it until this year, but it is apparently not uncommon in this region this season. (C. R. Orton, July 21).

DROUGHT INJURY AND DRY ROOT ROT ON BEANS IN NEW YORK: The drought in Genesee County continues. The bean crop is being severely affected and in a few instances bean growers are beginning to drag up their fields. The injury on beans is a combination of the dry weather, potato leafhoppers, and in many instances, dry root rot (Fusarium martii phaseoli). (S. R. Shapley, Weekly News Letter, July 24).

BACTERIAL CANKER OF TOMATO IN ARKANSAS: Bacterial canker of tomato (Aplanobacter michiganense) was noted in an extremely severe form in a two-acre field, probably cutting the yield at least 75 per cent, but it is not widespread. (V. H. Young, July 17).

BACTERIAL SOFT ROT IN WEST VIRGINIA: We have had some unusual hosts for bacterial soft rot this season; I mention two of these, hollyhock and summer squash. In both cases the roots and stems from the ground down are completely rotted. It also started very early in cabbage. Ordinarily soft rot in cabbage is serious with us about the time the heads are maturing.

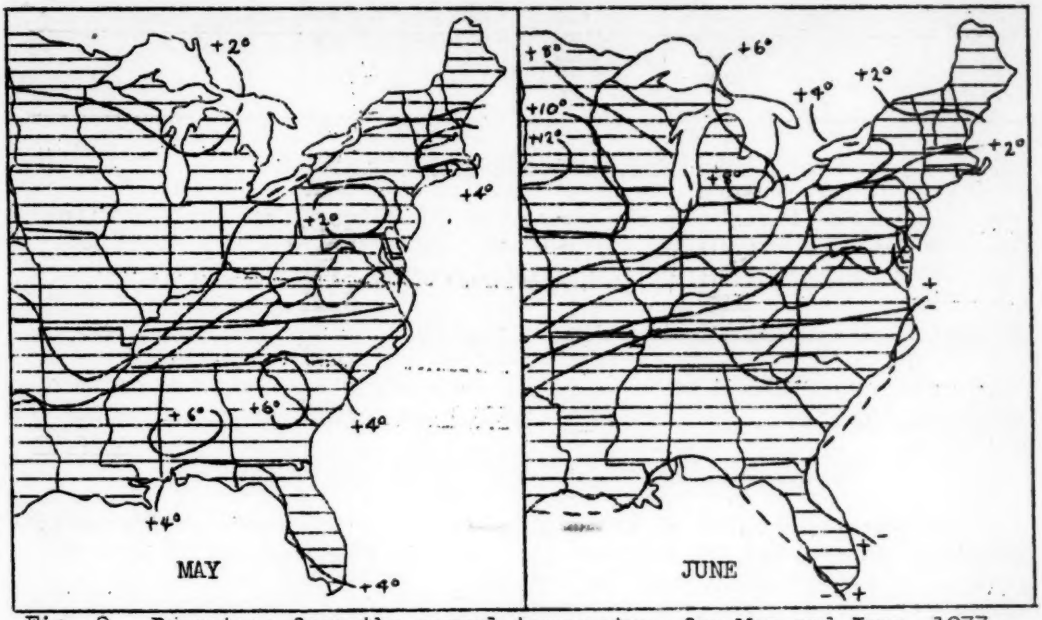

Fig. 2. Departure from the normal temperature for May and June, 1933. Shaded above normal; unshaded below normal.

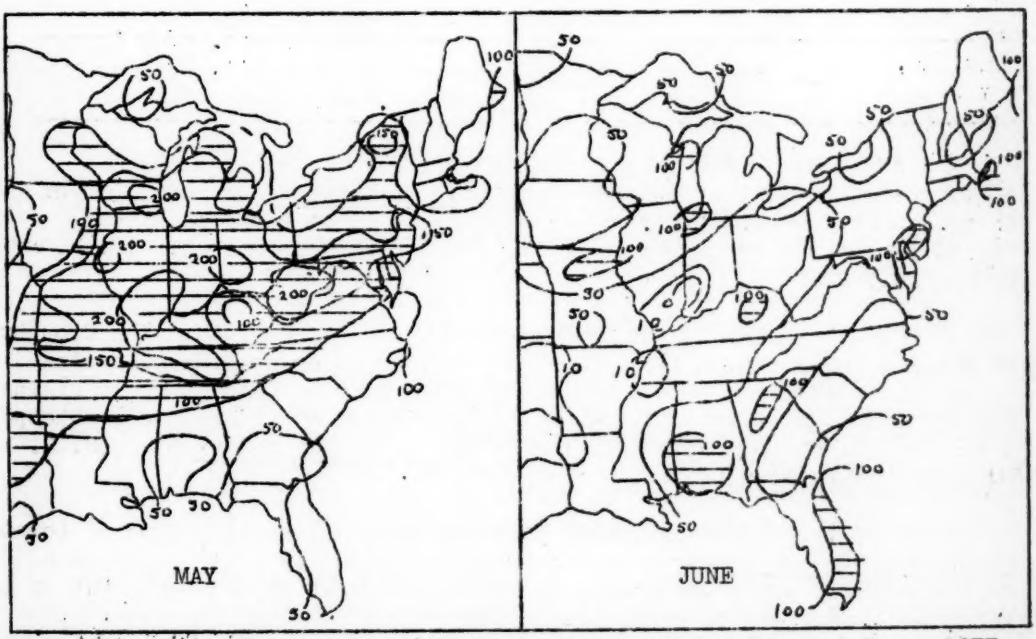

Fig. 3. Percentage of the normal precipitation for May and June, 1933. Shaded above normal; unshaded below normal.

This year it has been bad in gardens from the time the heads started to form. All this points to heavy soil infestation in an industrial area. (C. R. Orton, July 21).

BLACK ROT OF CABBAGE IN WEST VIRGINIA: We are having quite a little black rot of cabbage (Bacterium campestre) this year. It is very common in the emergency gardens throughout the industrial region around Morgantown. All of the infection apparently seems to be through the leaf margins and already the disease has progressed to the point where many of the leaves have dropped off. (C. R. Orton, July 14).

WEATHER AND DISEASE

WEATHER IN THE EASTERN UNITED STATES THIS SPRING

Students of plant diseases have been much impressed by the unusual incidence of a number of diseases on a variety of hosts during June and early July throughout the portion of the United States east of the Mississippi River and north of the Gulf States with the exception of New England.

In this connection, a study of the weather during April, May, and June shows interesting correlations which may well be significant. Throughout the area temperatures were consistently above normal during both May and June reaching a departure of +8° or more in parts of Michigan, Indiana, Illinois, and Wisconsin during the latter month. The temperature over most of the area was somewhat above normal in April. Precipitation, on the other hand, showed a decided contrast. Rainfall was above normal in most of the area in both April and May, reaching 200 per cent normal in at least five well scattered areas during May. In June, on the other hand, the weather became unseasonably dry although temperatures were even further above normal than earlier. Normal rainfall was recorded in only a few scattered centers while precipitation as low as 50 per cent was common and even as low as 10 per cent of normal was observed. (See Figures 2 and 3).

If we assume that the abnormally warm weather of April and May permitted unusual development and perhaps spore production by parasitic fungi and bacteria with abundant opportunity for infection, and that the very dry weather of June made the effects of the disease even more serious and more obvious on the hosts, we have a hypothesis which fits the known facts and may have some validity.

By way of contrast it may be noted that while in the previous year (1932), June was abnormally dry over much of this area, temperature for that month was close to normal. Neither April or May, 1932, showed marked excess of either rainfall or temperature, and on the average both months were below rather than above normal. (N. E. Stevens and J. I. Wood).